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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/350,552	07/09/1999	MALCOLM J. MCARTHUR	875.00291	8337

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EXAMINER

KIM, TAE JUN

ART UNIT

PAPER NUMBER

3746

DATE MAILED: 12/06/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/350,552

Applicant(s).

MCARTHUR ET AL.

Examiner

Ted Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "66" has been used to designate both the inlet and outlet to the tank in Fig. 2 (see page 7, lines 19-20). Correction is required.
2. The drawings are objected to because in Figure 4, the engine 20, should be "the engine compressor" and the element indicated as 22 (see page 9, line 10) for greater clarity. Correction is required.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 116 (Fig. 6). Correction is required.

### ***Oath/Declaration***

4. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the post office address of each inventor. A post office address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The post office address should include the ZIP Code designation.

### ***Specification***

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5. The specification is objected to because there is no indication of what relationship control 16 has with control 50.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Hibner et al (4,983,051). Hibner et al teach a gas turbine engine having a rotatable shaft 34, bearings 46 journaling said shaft, a conduit 88 extending to from the vessel to the bearings, a vessel containing lubricating oil, a solenoid operated valve 56 in the conduit 88 and operable only to fully open or fully close and a control circuit 59 for pulsing the solenoid at a controlled rate (i.e. on and off to in response to rotor speed, see col. 5, lines 57-col. 6, line 2) to alternately (a) allow oil flow and (b) halt oil flow to said bearings for a time insufficient to cause oil starvation of said bearings. Note that the bearings 46 have an outermost portion 64 that is exposed to the lubricating/damping oil.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waddington et al (5,067,454) in view of Zankl (3,856,114). Waddington et al teach a gas turbine engine having a rotatable shaft, bearings 38 journaling said shaft, a conduit 34 extending to from the vessel 22 to the bearings, a vessel 22 containing lubricating oil, a solenoid operated valve 46 in the conduit for metering the flow of lubricant to the bearings 38. The solenoid valve consists of two parts 74, 76, the second of which contains a metering spool 128. Waddington does not teach metering the lubricant by pulsing the solenoid fully open and fully closed. Zankl teaches that it is old and well known in the lubrication art to employ a computer controlled solenoid valve 20, 22 and metering orifice 36 for pulsing the valve open and close in order to precisely meter the amount of lubricant to a drive shaft (which generally has to have bearings). Zankl teaches that this advantageously reduces the amount of lubricant and lubricates the drive shaft more efficiently (col. 1, lines 23-30). Hobo et al teach that it is old and well known in the metering art to employ a controlled solenoid valve 4 that precisely meters the amount of fluid passing therethrough from a reservoir 1. Hobo et al teach that employ pulsed solenoids allows for precise metering of the flow. It is noted that for either Zankl or Hobo et al, the pulsing can occur very rapidly and thus is below the time limit for which oil starvation can occur (e.g. 3 seconds). It would have been obvious to one of

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ordinary skill in the art to employ a pulsed solenoid and even a metering valve, in order to more precisely meter the amount of lubricant delivered to the shaft bearings.

10. Claims 1, 2, 4-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waddington et al (5,067,454) in view of Zankl (3,856,114) as applied above, and further in view of Swearingen (4,390,082). Waddington teaches various aspects of applicant's claimed invention but do not teach the use of tank with a bladder. Swearingen teaches that it is old and well known in the art to employ a tank and bladder 68, 74 and pressure regulator 86 where the lubricant is inside the tank and expelled by the pressurized bladder to provide the lubricant to the bearings of a gas turbine shaft. It would have been obvious to one of ordinary skill in the art to employ a tank and bladder as an alternative source of lubricant old and well known in the gas turbine art. The controller of Waddington receives inputs of lubricant temperature, pressure, ambient temperature, altitude (see Fig. 2), and engine rpm which is directly related to the vehicle velocity. It would have been obvious to convert engine rpm to vehicle velocity, as an equivalent measure known in the art. The lubricant tank 22 of Waddington is in close proximity to the engine and hence is warmed by the heat of the engine.

11. Claims 1, 3, 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waddington et al (5,067,454) in view of Zankl (3,856,114) as applied above, and further in view of either McCarty (4,697,414) or Schulze (5,040,366). Waddington teaches various aspects of applicant's claimed invention but do not teach the use of tank with a bladder. McCarty teaches a tank 48 with a bladder 78 filled with lubricant 80. Schulze

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teaches a tank 57 with bladder 75 (Fig. 2) filled with lubricant. It would have been obvious to one of ordinary skill in the art to employ a tank with a bladder filled with lubricant as taught by either McCarty or Schulze, as equivalent lubricant storage means old and well known in the art. The controller of Waddington receives inputs of lubricant temperature, pressure, ambient temperature, altitude (see Fig. 2), and engine rpm which is directly related to the vehicle velocity. It would have been obvious to convert engine rpm to vehicle velocity, as an equivalent measure known in the art. The lubricant tank 22 of Waddington is in close proximity to the engine and hence is warmed by the heat of the engine.

### *Contact Information*

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 703-308-2631. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 703-872-9302 for Regular faxes and 703-872-9303 for After Final faxes.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached on 703-308-0102.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861.

General inquiries can also be directed to Technology Center Customer Service Office at 703-306-5648 or the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at

<http://www.uspto.gov/main/patents.htm>

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